1853MNRAS..13..223M

## *Discovery of a New Planet.* By M. Luther.

(*Extract of a Letter from Professor Argelander to the Rev. R. Sheepshanks.**)

"I have great pleasure in announcing to you the discovery of a new planet on the 5th of May, by M. Luther, at Bilk. Unfavourable weather prevented a complete confirmation of the discovery before the 14th of the same month: hence the late announcement. M. Luther has only sent the following positions:

| | Bilk M.T. | R.A. | Decl. |
|---|---|---|---|
| | h m | ° ′ | ° ′ |
| May 5 | 13 | 207 40 | − 10 15 |
| 14 | 11 52 | 206 3 | 9 57 |

To which may be added the following observations by M. Schönfeld:

| | Bonn M.T. | R.A. | Decl. |
|---|---|---|---|
| | h m s | ° ′ ″ | ° ′ ″ |
| May 15 | 12 0 41·6 | 205 53 41 | − 9 55 46·5 |

"The planet is only equal to a star of the 10·11th magnitude: consequently, it cannot be observed longer in our telescopes. The Northumberland refractor, however, might show it long enough to obtain elements of sufficient accuracy to prevent its being lost. Would you have the kindness to request Professor Challis to undertake the charge of the friendly stranger?

"*Bonn, May* 16, 1853."

M. Luther states, in a communication to the *Astronomische Nachrichten*, announcing his discovery of the planet, that he hopes to be enabled to follow its track by the aid of the excellent charts of Messrs. Bishop and Hind.

## *Micrometrical Measurements of the Double Stars, ε Boötis, γ Virginis, 44 Boötis, ζ Boötis, and ζ Herculis, made at the Observatory, Whitehaven.* By J. F. Miller, Esq. F.R.S.

### *ε Boötis.*

Magnitudes, 3, 7, 5. Colours, yellow and sea-green.

| Ref. No. | Position. | Weight. | Obs. | Distance. | Weight. | Obs.† | Epoch. |
|---|---|---|---|---|---|---|---|
| | ° ′ | | | ″ | | | |
| 98 | 321 58 | 3 | 8 | 2·862 | 2 | 9 | 1852·279 |
| 124 | 321 1 | 4 | 8 | 2·839 | 3 | 8 | 1853·230 |
| 137 | 320 39 | 2 | 9 | 2·736 | 1 | 3 | ·304 |
| Means | 321 15 | 9 | 25 | 2·829 | 6 | 20 | 1852·937 |

"124. With this power the small star is obviously sea-green; though, with 250, it was pronounced to be bright blue. There is no certain evidence of change in this star, either in position or in distance.

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* In consequence of Mr. Sheepshanks having been recently absent from this country, on the occasion of a short visit to the Continent, he did not receive M. Argelander's letter till a day or two ago, when the present number of the *Monthly Notices* had been already made up, and was just about being printed off. It only remained, therefore, to extract the more important parts, and substitute them for other communications, the publication of which might be conveniently delayed till the issue of the next number. This circumstance accounts for a part of the communication being inserted here, and another part at page 238.

† "The distances throughout represent double measures, consequently each set really consists of sixteen observations."

1853MNRAS..13..223M

## *γ Virginis.*

Magnitudes, 3·2, 3·5. Both stars white.

| Ref. No. | Position. | Weight. | Obs. | Distance. | Weight. | Obs. | Epoch. |
|---|---|---|---|---|---|---|---|
| | ° ′ | | | ″ | | | |
| 123 | 175 7 | 4 | 8 | 3·114 | 4 | 8 | 1853·227 |
| 125 | 75 11 | 4 | 8 | 3·067 | 4 | 8 | ·241 |
| 126 | 175 15 | 4 | 8 | 3·167 | 4 | 8 | ·241 |
| 29 | 174 44 | 4 | 8 | 3·041 | 4 | 8 | ·243 |
| 130 | 174 58 | 4 | 9 | 3·274 | 1 | 8 | ·298 |
| 136 | 174 33 | 1 | 7 | ... | ... | ... | ·304 |
| 139 | 174 20 | 2 | 8 | ... | ... | ... | ·312 |
| Means | 174 54 | 23 | 56 | 3·108 | 17 | 40 | 1853·266 |
| Means | 175 17 | 11 | 48 | 3·122 | 7 | 24 | 1852·262 |
| Means | 175 54 | 7 | 15 | 3·040 | 3 | 8 | 1851·475 |

The upper star is still the brightest.

## 44 *Boötis.*

Magnitudes, 5, 5½. Both stars white.

| Ref. No. | Position. | Weight. | Obs. | Distance. | Weight. | Obs. | Epoch. |
|---|---|---|---|---|---|---|---|
| | ° ′ | | | ″ | | | |
| 127 | 240 25 | 4 | 8 | 4·291 | 4 | 8 | 1853·241 |
| 128 | 240 25 | 4 | 8 | 4·349 | 3 | 8 | ·241 |
| 134 | 239 20 | 3 | 8 | 4·361 | 2 | 9 | ·304 |
| 135 | 239 36 | 2 | 7 | 4·367 | 2 | 8 | ·304 |
| 140 | 240 52 | 4 | 8 | 4·370 | 4 | 8 | ·315 |
| Means | 240 14 | 17 | 39 | 4·349 | 15 | 41 | 1853·281 |

"The collected measures show that the stars have been gradually opening since the distance was first determined by Struve, in 1819.

| | Position. | Distance. | Epoch. |
|---|---|---|---|
| | ° | ″ | |
| Herschel I. ............ | 60·10 | ... | 1781·62 |
| Struve .................. | 228·0 | 1·50 | 1819·43 |
| Do. ..................... | 233·65 | 2·555 | 1829·20 |
| Dawes .................. | 235·65 | 3·280 | 1833·39 |
| Do. (Bishop's Cat.) | 235·60 | 3·841 | 1842·39 |
| Hind (Do.)............ | 237·99 | 4·261 | 1847·09 |
| Miller .................. | 240·23 | 4·349 | 1853·28 |

## *ζ Boötis.*

Magnitudes, 4·5, 4·5. Both stars white.

| Ref. No. | Position. | Weight. | Obs. | Distance. | Weight. | Obs. | Epoch. |
|---|---|---|---|---|---|---|---|
| | ° ′ | | | ″ | | | |
| 133 | 127 38 | 4 | 8 | 1·2 est. | ... | ... | 1853·298 |
| 138 | 127 32 | 2 | 8 | 1·1 est. | ... | ... | ·312 |
| 141 | 126 33 | 4 | 8 | 1·202 | 4 | 8 | ·315 |
| 143 | 127 25 | 4 | 8 | 1·181 | 4 | 8 | ·317 |
| Means | 127 14 | 14 | 32 | 1·191 | 8 | 16 | 1853·310 |

1853MNRAS..13..223M

"A comparison of prior measures with the above appears to indicate the fixity of this pair.

| | Position. | Distance. | Epoch. |
|---|---|---|---|
| | ° | " | |
| Herschel I. ………… | 131·98 | 1·00 | 1796·60 |
| Struve ……………… | 129·28 | 1·19 | 1830·47 |
| Dawes ……………… | 128·28 | 1·32 | 1832·47 |
| Do. (Bishop's Cat.) | 127·03 | … | 1841·57 |
| Do. (Do.) ………… | 127·03 | 1·039 | 1843·32 |
| Miller ……………… | 127·23 | 1·191 | 1853·31 |

"I cannot say that I have ever seen this star fairly divided before the present spring.

### *ζ Herculis.*

Magnitudes, 3, 7. Colours, A yellow; B purple.

| Ref. No. | Position. | Weight. | Obs. | Distance. | Weight. | Obs. | Epoch. |
|---|---|---|---|---|---|---|---|
| | ° ' | | | " | | | |
| 132 | 77 28 | 1 | 8 | 1·5 est. | 1 | … | 1853·298 |
| 142 | 78 49 | 4 | 8 | 1·454 | 3 | 8 | ·315 |
| 144 | 78 38 | 4 | 8 | 1·334 | 4 | 8 | ·317 |
| 146 | 79 40 | 2 | 8 | 1·422 | 1 | 8 | ·324 |
| 147 | 78 8 | 2 | 9 | … | … | … | ·378 |
| 149 | 78 25 | 3 | 8 | … | … | … | ·380 |
| Means | 78 38 | 16 | 49 | 1·402 | 9 | 24 | 1853·335 |
| Means | 84 4 | 4 | 16 | … | … | … | 1852·769 |
| Means | 89 9 | 6 | 16 | … | … | … | 1851·650 |

"This elegant binary star, with the short period of thirty-five years, moves with such rapidity in its orbit, that the angular motion of the acolyte is quite appreciable, year by year.

"The epochal results indicate an increase in the distance of late years; and I believe the interval between the components is now not far short of 1½ seconds.

| | Position. | Distance. | Epoch. |
|---|---|---|---|
| | ° | " | |
| Herschel I. ………… | 69·30 | … | 1782·55 |
| Struve ……………… | 23·40 | 0·910 | 1826·63 |
| Do. ………………… | 196·99 | 1·094 | 1835·45 |
| Do. ………………… | 168·65 | 1·030 | 1838·44 |
| Dawes (Bishop's Cat.) | 150·67 | 1·230 | 1840·66 |
| Do. (Do.) ………… | 129·89 | 1·298 | 1843·58 |
| Struve ……………… | 119·06 | 1·248 | 1845·27 |
| Dawes ……………… | 112·23 | … | 1846·83 |
| Miller ……………… | 89·15 | … | 1851·650 |
| Do. ………………… | 84·06 | … | 1852·769 |
| Do. ………………… | 78·63 | 1·402 | 1853·335 |

1853MNRAS..13..226R

"The companion of ζ *Herculis* has been pretty steadily visible in my telescope during the last three years.

"Between the 24th of March and the end of April we were favoured with an uninterrupted continuance of the finest astronomical weather I almost ever remember, and it was during this period that most of the above results were obtained. The eye-piece employed was a new lens of admirable workmanship,—power 500, made by Mr. Simms, with which systems of the 3d and 4th magnitude (under illumination) presented perfect discs, with scarcely a trace of rings. Indeed, nothing could exceed the beauty and sharpness of the stellar definition with this eye-piece; and I prefer it to any lower power, when the atmosphere is at all tolerably steady.

"During the magnificent weather which has prevailed since the commencement of May, the astral definition has been so deplorable that I have only obtained three sets of positions in as many weeks, with the apparent advantage of an almost continuously bright and unclouded sky. Since the beginning of the month the air has been in an exceedingly dry state, the dew-point ranging from 12° to 22°·5 below the temperature of the air.* To the very unequal distribution of moisture over the upper and lower strata of the atmosphere the twirling, moulding, and blotted appearance of the stars is, no doubt, to be attributed.

"*Observatory, Whitehaven, May* 24, 1853."

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## *On the probable Errors of the Eye and the Ear in Transit Observations.* By the Rev. T. R. Robinson, D.D., President of the Royal Irish Academy.

With respect to the usual mode of recording transit observations, and the invention recently introduced at American observatories for accomplishing the same object by means of electricity, the author remarks, that *the two systems not merely employ different senses to co-operate with sight, but that the sight itself is used in two different ways.* In the "Electric Register" the eye catches the moment when the star crosses a wire, and the touch is to synchronise with it in giving a signal. In the common modes the ear counts the clock's beats; the eye notes the distances of the star from the wire at the beats which precede and follow its passage, and thus the mind estimates the fraction of the second from the relative position of three points; all existing in memory alone, when that estimation is made.

"The error, which may be caused by uncertainty in catching the precise part of the beat which shall be taken for the origin of the second, is the same for every star (at least, if we suppose the

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* "To day (24th), at 3 p. m., the difference between the temperature of the air and of evaporation was 16°·3; and the complement of the dew-point, 24°·5 ! !"